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NOVEMBER 1960

# agricultural marketing

TURKEYS FOR THANKSGIVING  
BUMPER CRANBERRY CROP



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Volume 5, Number 11

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### Cover page

The pre-Thanksgiving turkey hunt of our Pilgrim Fathers now amounts to nothing more than a trip to the supermarket. And though the bird bears the same generic name—*Meleagris gallopavo*—there's little other resemblance. Today's turkey is a far cry from the tough old field bird of the 1600's. Modern production and marketing research have made his breast broader, his meat more succulent. Inspected for wholesomeness and graded for quality, he comes to the housewife "ready-to-cook"—a Thanksgiving treat that's still the favorite of all Americans.

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## USDA's Plentiful Foods Program Assists Industry in Merchandising

# BUMPER CROP OF CRANBERRIES

**T**HE CRANBERRY industry, which last year suddenly found itself in serious marketing difficulty, now is waging a comeback.

Lending a helping hand is the Plentiful Foods Program of the Agricultural Marketing Service. This agency is used to working with seasonal marketing problems, but never before had it run into a situation like the "cranberry scare."

Ever since the Food and Drug Administration announced last November that some cranberries were possibly contaminated by chemicals, the cranberry market had been woefully slack. Even cleared berries went unsold during the 1959 holiday season.

As the new year rolled around, the industry was in serious trouble. It had a tremendous surplus on hand, a new crop in the offing—and few markets.

It was at this point that industry and Government leaders got together on an intensive merchandising drive. Aimed at the pre-Easter market, which has always been the third heaviest cranberry sales period, USDA launched a Special Plentiful Foods Program. Cranberry releases went to food editors, to women's programs on radio and television, and to magazines and other mass media. All emphasized the usefulness of delicious wholesome cranberry products.

Meanwhile, home demonstration agents and food marketing information specialists of the Extension Service brought more cranberry facts to the consumers.

The response and cooperation were immediate and wholehearted. Stores

put on special displays and sales of cranberry products; hotels and restaurants restored cranberries to their menus.

As Secretary of Agriculture Ezra Taft Benson recently wrote to food industry leaders around the country, "One of the heartening events to emerge from the cranberry misfortune of last year was the manner in which the Nation's food industry worked to restore consumer confidence in this excellent food product."

When the figures were added up after Easter, sales showed a 16 percent increase over those of the same period last year.

This fall, with another bumper crop of cranberries to be marketed, the industry has mapped another major promotion of fresh and processed cranberries. Again, it has the full support of the USDA Plentiful Foods Program.

The campaign opened with Cranberry Harvest Week in early October. It will continue right through the holiday period.

Once more the Plentiful Foods Program is proving its value as a vehicle which can help to bring American farm products to consumers as smoothly as possible along the sometimes bumpy marketing path.

This is what Secretary Benson was saying when he wrote: "Full restoration of the cranberry market, in my opinion, must ultimately come from a revitalization of movement through normal channels of trade. With the continued assistance of the food industry, I am confident we can go a long way toward realizing this goal."



Freshly baked, sweet and savory are these good cranberry desserts. Upside-down cake, tarts and filled cookies are three versions of cranberry treats that can be made now and all year round.



Here is a new cranberry relish baked with fresh berries and studded with golden toasted walnuts.



And no holiday dinner would be complete without cranberry salad. This salad includes grapes.



Above, Digital Fibrograph  
Left, Cotton Trashmeter  
Right, Micronaire



## Laboratory Equipment aids

# Cotton Classers

by Henry Webb, Jr.

**T**HE QUALITY of cotton has traditionally been measured by grade and staple length, as determined by a trained classer. But in recent years, substantial progress has been made in determination of cotton quality by means of instruments.

Laboratory equipment cannot replace the human classer in the foreseeable future, but several instruments are now being used to aid classers of the Agricultural Marketing Service in their important job of classing the cotton crop.

Principal among these instruments are the Cotton Colorimeter, the Micronaire and similar airflow instruments, and the Fibrograph.

The Colorimeter is a photoelectric instrument which measures the color of cotton in terms of brightness and yellowness. A diagram on each instrument relates these measurements to those of the official standards. Measurements can be completed in a few seconds.

Since the Colorimeter measures the composite color of whatever sample is placed on the instrument, the measurement of a normal sample of cotton includes the color of the fiber and

leaf plus the effect of preparation. Thus the measurement is not strictly one of fiber color alone. The grade diagram takes this into consideration for it is based on the combination of these factors found in the official standards.

Measurements of samples similar to the standards in this relationship are very accurate. For samples that vary from the standards in combinations of these factors, the Colorimeter still provides the classer with valuable assistance in determining the composite color of the sample.

The Micronaire and other airflow instruments measure the amount of air which flows through a weighed sample of cotton when compressed to a standard volume and subjected to a standard air pressure. Since fine and immature fibers offer greater resistance to the flow of air than coarse and mature fibers, this method provides an indirect measure of fineness and maturity in combination.

These factors are important in the spinning utility of cotton, and high volume testing can be attained at reasonable cost. Although Micronaire measurements differ by variety, they help the cotton classer to detect "wasty" cottons.

The Fibrograph measures fiber length distribution by the amount of

light transmitted to a photoelectric cell when combed cotton fibers are passed through a light beam. Several measurements can be obtained which indicate the length and length distribution of the fibers in the cotton sample. Each sample has to be manually combed and the results obtained from a length-number curve by trained technicians.

The Fibrograph is, therefore, far too slow to be used on all of the millions of bales classed each year by AMS personnel, but it is a valuable aid to supervisors in checking the level of classers' staple length designations.

The development within AMS of an instrument to scan the surface of cotton for leaf and trash began in 1938. The 1959 model, called a Cotton Trashmeter, shows promise of providing a quick and accurate optical-electronic instrument for measuring another important factor of cotton quality.

The Colorimeter, Micronaire, and Fibrograph have been used for many years in cotton standardization work. They are gradually being worked into the Department's cotton classing programs, as AMS technicians continue to search for better ways to provide meaningful measurements of cotton quality.

The author is a staff member of the Cotton Division, Agricultural Marketing Service.



# Turkeys FOR THANKSGIVING

by Edward Karpoff

**Y**EARS AGO, fine New York hotels served more "Maryland" turkey than ever left the Free State. Meanwhile, Baltimore hotels featured "Vermont" turkey.

In much the same fashion, housewives singing well-deserved praises for the Beltsville Small White turkey have expanded their hosannas to cover more and more turkeys each year—even though production figures fail to bear them out.

Farmers have never duplicated the 1954 record crop of 19 million Beltsville turkeys! In fact, this year's production of 10 million birds is the second smallest since 1950.

An increasing proportion of the small white turkeys which serve the family trade have come from the burgeoning numbers of "heavy-breed white turkeys" and from crosses that involve heavy-breed white turkeys. In 1960 farmers are raising 22 million such birds, whereas 5 years ago the numbers were so few that they were not even separately reported.

The heavy-breed white turkey is an economic compromise. It's a compromise that's being improved every year. But still, an immature white

hen rarely yields as well-finished an 8-pound family-size carcass as does a plump Beltsville of the same size, nor does the mature white tom often reach the 28-pound weight class that tops the frozen heavy turkey market.

Why, then, its existence? Because the heavy-breed white has certain characteristics that ease marketing problems.

For one thing, turkey markets are unstable. Some years big turkeys pay best; other years small turkeys. The heavy-breed white turkey gives the farmer a chance to defer the choice, not of what kind of turkey he will raise, but at least of what size of turkey he will sell.

By growing heavy white turkeys, farmers get some of the same advantages that bettors get from hedging. If the current market for small turkeys is better than the prospective market for heavy turkeys, the hens from a flock of heavy whites can be slaughtered young at a weight competitive with Beltsvilles. Sometimes it's even practical to treat the toms the same way.

Conversely, if the market for small turkeys seems less favorable, the flock can be grown to heavier weights, competitive with the standard Broad-Breasted Bronze turkey which still comprises the bulk—about 60 per-

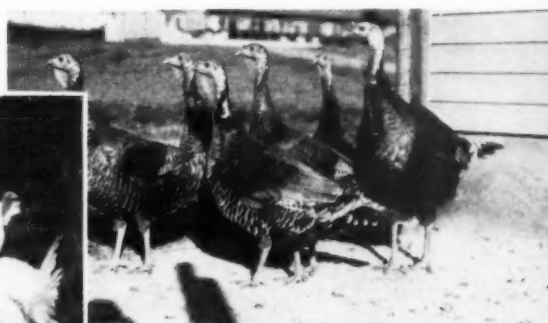
cent—of this year's crop of 82 million turkeys.

The foremost feature of the heavy white turkey, which permits this choice, is its white plumage. Bronze turkeys show noticeable pinfeathers unless they are slaughtered at just the right stage of maturity. White turkeys don't present this problem—their pinfeathers are not as conspicuous as those in the Bronze turkeys. This makes pinfeathering a less exacting job in the preparation of white turkeys for market and gives them a considerable advantage, in this respect, over Bronze turkeys.

The heavy-breed white has another advantage over the Bronze. Most white strains are better egg layers. And the better they lay, the cheaper their poults can be sold. Poults (day-old turkeys, freshly hatched) typically sell for about 60 cents each, so the initial cost of the bird is a significant factor in whether or not a turkey-growing venture is profitable.

Breeders are hard at work improving present strains of white turkeys and introducing new ones. The accent they put on plumage color and on fleshing and conformation are proof of the inseparability of production and marketing objectives in farm enterprises.

The author, a staff member of the Agricultural Economics Division of AMS, is the editor of USDA's *Poultry Situation*.



Although Broad-Breasted Bronze turkeys account for 60 percent of this year's crop, the heavy white is rapidly gaining favor.

# A SALAD ASSEMBLY TABLE

FOR RESTAURANTS AND CAFETERIAS

by Philip C. Kannan

**T**HE old-fashioned "lazy susan" has gone modern.

Enlarged and slightly modified, it can be used as a salad assembly table in the kitchens of restaurants and cafeterias. In the process it should help expand fruit and vegetable consumption by means of lower costs and better quality products.

The table increases productivity from 43 to 217 percent—depending on the type and number of salads assembled at one time.

Increased efficiency is something long needed in the salad assembly operation. Cafeteria operators point to this as one of the jobs most needing improvement in their kitchens. As it's done now, there are too many time-consuming movements and too much fatigue involved.

The "lazy susan" designed by AMS researchers is equipped with a circular ice bed upon which the ingredients

are placed in bowls or pans. The bed is tilted toward the operator and placed at an ideal height.

This top deck of the lazy susan is free moving, so the operator—with a flick of the wrist—can move the needed ingredients right in front.

The second and larger deck also is easily rotated. Here the salads are assembled. On the disk are empty salad plates and later completed salads.

Tests of the "lazy susan" salad table in a midwestern cafeteria showed these advantages:

- Increased productivity
- Fresher salads (because they are made closer to the time of sale)
- Less operator fatigue
- More easily accessible ingredients.

Chief among the disadvantages was the fact that it's a specialized piece of equipment. The new lazy susan also:

- Has limited storage space for supplies, and
- Needs more floor space than

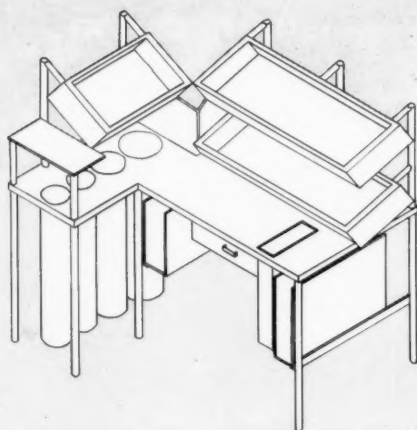
conventional type tables.

In addition to their work on the lazy susan, AMS researchers have designed an "L-shaped" table for salad assembly. This table provides for the storage of ingredients on an ice bed, storage of supplies, dish lowerators, and a container for scrap disposal.

Still in the process of construction, the "L" table will be tested in a large restaurant chain in the East.

Work to improve the salad assembly operation was begun by marketing researchers after consultation with cafeteria operators. This, they said, was an area in which major savings could be realized through improved work methods and equipment.

Studies such as this—to find new and more efficient ways of moving farm foods through marketing channels—are part of a broad research program now underway in the Agricultural Marketing Service. Increased efficiency at any stage of the marketing route means greater savings to all concerned—and a better return to the producer.



"L" shaped table above or lazy susan at right offer two possible ways to improve salad assembly





U. S. farm surplus foods  
distributed immediately to  
disaster victims in Puerto Rico

## *in wake of HURRICANE DONNA*

by Virgilio Rabainne

**I**N THE QUIET that followed the rains and the flood, a small child huddled close to its mother; another, bedraggled and drenched, whined pitifully a few feet away.

These were the victims of Hurricane Donna. Although the big wind has spared Puerto Rico, the rains and the floods that came in its wake had taken their toll.

More than 100 were dead and missing. Nearly 4,500 houses had been destroyed; another 3,000 badly damaged.

Food and shelter were immediately necessary for some 8,000 refugees. Both came from the American Red Cross—with the food being provided by the School Lunch Program.

Unlike the people of Puerto Rico, who had ignored weather bureau reports, School Lunch officials had been preparing for just such an emergency. They had laid in an extra month's supply. And this additional food now came to the rescue of the homeless and hurt.

Of these there were many. On the day following the hurricane (September 7), about 8,000 were in immediate need of food and shelter. The second day this number was cut in half. (Many had been able to help themselves or had moved in with relatives.) But as late as September 15th, more than 2,700 people were still being

sheltered in Army tents and fed by the School Lunch Program.

Forewarned, the Civil Defense, the American Red Cross, and the State School Lunch Division had made their plans. A written agreement between the Red Cross and the local School Lunch organization provided the authorization to distribute USDA donated food stocks in case of natural disaster.

It specifically included disaster victims evacuated by Civil Defense from danger zones and sheltered in schools or other public buildings. This cut red tape and immediately put at the disposal of the Red Cross available stocks of surplus foods in school lunchrooms and central warehouses. Feeding facilities and personnel at the schools also were utilized.

To those not housed in public buildings, food was distributed by a State agency under emergency certification.

Most of the hurricane victims were already on welfare rolls. These did not need special certification. In all, less than 1,700 new emergency food certificates had to be issued—and these covered 8,832 persons for a 3-month period.

Thus with a little foresight and planning, the Puerto Rican Civil Defense, American Red Cross, and USDA School Lunch Program brought food and shelter to those who otherwise would have had none—the whimpering child, the crying babe, and their destitute parents.

The author is administrative officer-in-charge, Puerto Rico office of AMS, Food Distribution Division, Santurce, P. R.

More than a week after Donna had passed, 2,700 inhabitants were still sheltered in Army tents and fed with food from Federal School Lunch Program.



AMS researchers study

# CUSTOMER'S SHOPPING HABITS IN RETAIL FOOD STORES

*to assist farmers and distributors of farm products in maintaining and expanding their market outlets*



by Nick Havas and Hugh Smith

**E**VER WATCH a woman wind her way through a supermarket? At first glance, there appears to be little method to it—as she moves to the bakery department to pick up a loaf of bread, crosses the aisle to examine a new type of salad dressing, and then wheels her cart to the canned goods for a jar of jelly.

Her path varies each time she goes to the store and her purchases are seldom the same.

Nonetheless, she follows a certain general pattern.

Most likely the little woman won't shop the entire store. She'll spend most of her time along the perimeter and in the cross aisles. And with or without a shopping list, she'll end up with a lot of "impulse" items.

These are some of the things AMS marketing research specialists noted as they observed more than 3,000 shoppers in 13 Boston supermarkets.

As shoppers moved through the stores, their individual paths and shopping activities were recorded on an outline of the store's selling area.

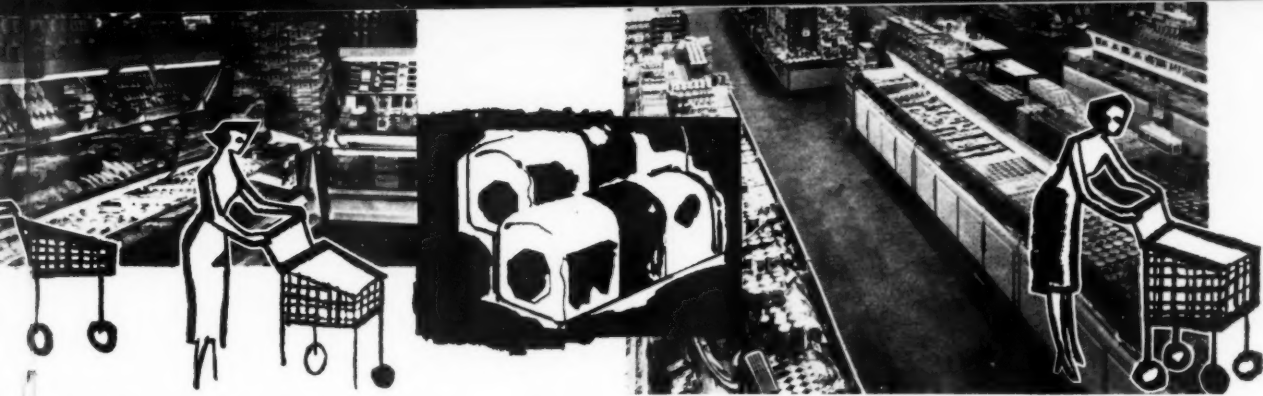
Every time a shopper picked up and examined an item, it was recorded. If she purchased anything, that too was indicated.

In the end, the researchers knew more about where she'd gone and what she'd done than the housewife herself.

To this they added several other bits of information. Did she have a

The authors are staff members of the Market Development Research Division of AMS. This article is the first of a series that *Agricultural Marketing* will carry on the findings made by AMS researchers in their study of customer shopping patterns.





list? How long did she spend in the store? How much was her bill?

Together, this information brought into sharp focus customer shopping habits.

Although the research findings might not apply to all supermarkets (because different store layouts and different placement of the merchandise result in different traffic patterns), they do provide the retail trade with useful principles that may be used in improving store layout and placement of products and departments.

This type of information should enable the stores to operate more efficiently and move an increased volume of farm-produced foods to the consumer.

The study calls for—

- A relocation of “power” items throughout the store.
- The separation of steady-selling, heavily shopped departments.
- The possible use of continuous rather than split gondolas which results in cross aisles between. (A gondola is a row of shelves.)

In Boston, the average shopper passed only 64 percent of the store’s display locations. She skipped down cross aisles, peeked across island displays, and picked up several items (bread, milk, and meats, for example) in a single area.

As an incentive to have her shop each and every aisle—and go past all of the store’s wares—“power” items should be placed strategically throughout the store. (“Power items are those products that are most

regularly purchased—bread, milk, butter, eggs.)

For instance, put bread on display at the end of the bakery counter so the customer has to pass the cakes, pies, and rolls en route. You’d be surprised how often she’ll stop and buy some other item as well as the bread. (In Boston, when this plan was followed, cake sales rose without any loss in bread sales.)

Cross aisles offer very little sales advantage. And, they have one very definite disadvantage—they allow the customer to short-cut her shopping trip.

Less than 5 percent of the customers shopping in stores with cross aisles cover the entire store. But, if the store has continuous gondolas, 25 percent make the circuit.

To relieve the monotony of long aisles, spruce up the gondolas with special displays extending into the aisles for possibly 10 or 12 inches. Place these either opposite each other or in a staggered pattern.

And don’t bemoan the loss of a few end displays. In Boston, end displays in stores with continuous gondolas accounted for 2.7 percent of all purchases. With double the number of end displays (possible by the use of divided gondolas), these purchases totaled only 2.9 percent.

End displays, containing staple items that are sale priced and generally advertised, increase sales for the particular items, but may tie up traffic and discourage shopping in regular aisles.

The most heavily traveled areas

in the test stores were along the perimeter and through the cross aisles. This suggests two possible changes in merchandising: (1) Place your top-profit items in the end displays, and (2) Block cross aisles so more customers shop the grocery aisles.

Or, entire departments can be moved to redistribute customer traffic. For example, when the dairy and bakery departments are placed side by side, the area frequently becomes congested because both are heavily shopped. If, however, these two departments were located at opposite sides of the store, each would draw customers to its separate area—and shoppers would pass many other items enroute.

The researchers also found that—

Customers in the 31 to 50 age bracket are the most complete shoppers.

More than two-thirds of all customers use no shopping list in covering the store.

People with lists spend more time and more money per minute in the store.

Those who visit every section spend an average of \$12.30 per shopping trip; persons not covering the entire store buy only \$5.70 worth of merchandise.

However, total purchases of both these customers will vary with the size of the store. Although the average value of each purchase is about the same (56 cents), people tend to make fewer purchases when shopping in small stores than they do in larger stores.





Revised USDA standards for poultry make job grading more precise, give consumer more nearly uniform product.



## This Year's Holiday Turkeys Graded under Revised **STANDARDS**

by Lester Kilpatrick

**T**HANKSGIVING and Christmas turkeys from this year's crop will be graded under revised USDA standards. As a result, turkeys within each grade will be more nearly uniform in quality.

In fact, that's why the Poultry Division of USDA's Agricultural Marketing Service revised the U.S. standards for poultry—so the Government grader can more easily understand them and more precisely apply them to his grading job.

For example: The amount of fleshing required on the breast of Grade A birds is now spelled out in detail. This makes it considerably easier for the grader—particularly when grading larger breeds of turkeys marketed as broiler-fryers (4 to 8 pounds) and smaller sizes of chickens which are sometimes marketed while yet immature.

The revised standards and grades for poultry issued July 1, 1960, how-

ever, include more than a redefinition of the standards. They provide new standards and grades for poultry parts and new wholesale and procurement grades.

In addition, the new standards limit the use of the official letter grades—A, B, and C—to individually graded, ready-to-cook poultry. Previously, this letter grade was also used on lots of poultry graded on a wholesale basis—that is, poultry graded on representative samples and with some allowance for undergrade specimens.

The new wholesale poultry grades provide for sample grading but employ new terminology—U.S. Extras, U.S. Standards, and U.S. Trades. These grades are comparable to the A, B, and C grades but permit some allowance for lower quality birds.

Although this change was made to facilitate wholesale trading and to avoid confusion between the wholesale and consumer grades, it will also assure the consumer that any bird marked U.S. Grade A has been individually graded.

There are also new procurement

standards and grades. These are designed for use of large-scale buyers—hospitals, restaurants, manufacturers of canned poultry products, schools, and the like—who are primarily concerned with the meat yield of poultry rather than its appearance.

Poultry meeting the requirements for U.S. Procurement I would yield as much meat as U.S. Grade A birds, but the fat covering and conformation may be comparable to that of Grade B. In addition, extensive trimming is permitted, and wings or parts of wings may be missing.

Poultry graded as U.S. Procurement II has a somewhat lower yield, and trimming is permitted up to 10 percent of the meat. Half carcasses may be included in this grade if the meat yield represents half of the total.

These procurement grades will probably be most useful in buying turkeys and stewing chickens.

The revised regulations governing the grading of poultry parts authorize supervision of packaging and the elimination of any part that is not up to the standards for the grade. Previously, parts cut from a carcass could be packaged with the letter grade for which the carcass qualified without further examination.

The new grades for poultry parts require that birds be graded for fleshing before they are cut up and that after cutting each part be examined. Lesser defects are permitted on an individual part than are permitted when the carcass is graded as a whole.

Each of the changes and additions in the standards is aimed at making the poultry grading service better suited to the needs of the industry and the consumer. Changes have been tailored to fit the various trade channels and to give the public a better poultry product.

The author is assistant chief of the Standardization and Marketing Practices Branch, Poultry Division, AMS.

## AMS tests

# LIQUID NITROGEN REFRIGERATION SYSTEMS *in trucks*

by J. J. Dougherty, Jr.

**THE PROBLEM:** Maintaining frozen food at low temperatures during transit.

One possible solution: Liquid nitrogen.

AMS transportation specialists see advantages—and some disadvantages—in using liquid nitrogen refrigeration systems in trucks moving frozen foods from warehouses to retail stores.

Preliminary investigation found that cost may be a disadvantage. Not the cost of installation, but the cost of the nitrogen itself—especially when used in relatively small quantities.

Dry ice, for example, costs about 4 cents a pound; liquid carbon dioxide, 4 to 5 cents; and liquid nitrogen anywhere from 2 to 8 cents.

Nitrogen is sold on a sliding scale. To get the lower rate, large quantities must be used. So, unless a company equips a fleet of trucks, or several companies in a city get together, the cost might run too high for practical purposes.

But look at the advantages—

- The system is inexpensive, easy to install.
- Transportation requirements (insulation and tightness of the truck; loading of the merchandise, are no more rigid than for other cooling methods.
- Cooling is more evenly distributed, more effective.
- Control is excellent.

Further, in properly equipped vehicles nitrogen cooling should virtually eliminate pull-down time (the time required to cool a truck before loading it with refrigerated produce).

Nitrogen also lowers the humidity within the truck so the frozen foods are dry and easier to handle.

And use of the gas is not particularly dangerous.

Because of its temperature ( $-320^{\circ}\text{F.}$ ), liquid nitrogen must be treated with respect. But a few simple precautions in the installation of the cylinders are all that are necessary.

For the driver, there is little danger. Even were he trapped inside the truck—say, the wind blew the door shut while he was loading or unloading—he could turn off the safety switch before the spray of nitrogen begins.

In the AMS tests, a simple nitrogen spray system was installed in a frozen food truck. A single pipe ran along the ceiling from the front to the rear.

Liquid nitrogen sprayed out of this pipe directly on the load. As it flashed into a gas, it expanded about 700 times, forcing the warm air out of the truck and replacing it with cold, dry nitrogen.

Once the temperature was established, it was easily maintained.

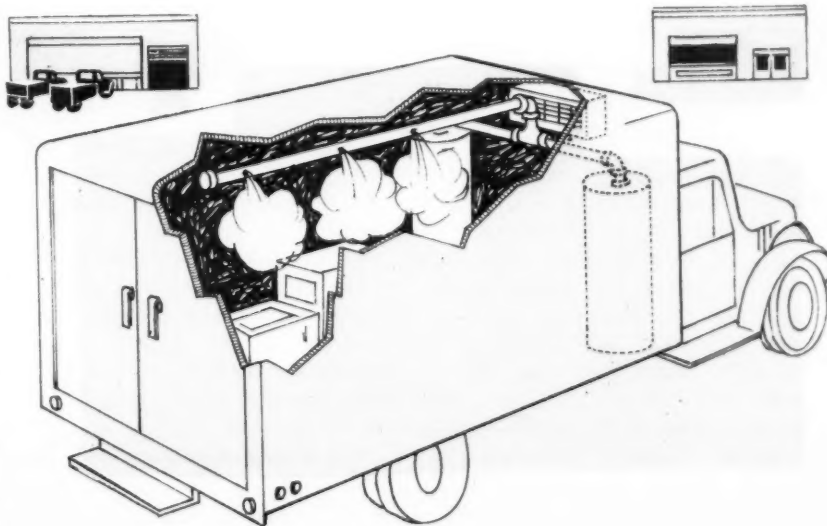
Because the test truck was not airtight and the insulation not as thick as it might have been, the cooling process required a rather large quantity of nitrogen. But, it should be re-

membered, these same conditions would have affected any other cooling system in much the same way.

Despite this obvious drawback, the truck cooled by liquid nitrogen made its last delivery of the day with the frozen food temperatures very close to those at the time it left the warehouse that morning. During a five-day test period, the average temperature of the frozen foods when leaving the warehouse was  $12^{\circ}\text{F.}$ ; the average lading temperature at the last delivery was  $9^{\circ}\text{F.}$  This is noticeably better than in trucks cooled by conventional methods.

In separate tests with a truck refrigerated by "cold hold" plates and with a plastic curtain just inside the door (to keep the cold air in during deliveries), the lading temperature of the frozen foods rose from  $-8.9^{\circ}\text{F.}$  to  $7.8^{\circ}\text{F.}$  In an identical truck, without a cold curtain, beginning temperatures average  $-9.2^{\circ}$ ; end readings,  $10.7^{\circ}\text{F.}$

The full report of the AMS experiment will be published some time this winter. Look for "Field Test of Liquid Nitrogen Refrigeration System Truck."



The author is a staff member of the Transportation and Facilities Research Division of AMS.

# MARKETING RESEARCH FINDS BETTER WAYS of packaging, storing, and transporting FRESH FRUITS AND VEGETABLES

## "Rail Car Fumigation of GRAPES"

**A**PPROXIMATELY 14,600 rail cars of California table grapes were fumigated before being shipped to eastern markets during the 1959-60 season.

This treatment, however, can cause injury to exposed packages at the surfaces of the load and fail to control decay in the load center if the gas is not evenly dispersed.

Agricultural Marketing Service scientists have taken a critical look at present fumigation methods and have come up with some constructive observations to promote the efficient fumigation of table grapes. They

found that:

- Conventional methods of fumigation provide poor distribution of gas in the rail cars.

- A supplemental fan in the center brace area promotes rapid and efficient gas distribution. Car fans cannot be used for this, because they circulate air through the bunkers of the car and sulfur dioxide is removed when it passes over the ice in these bunkers.

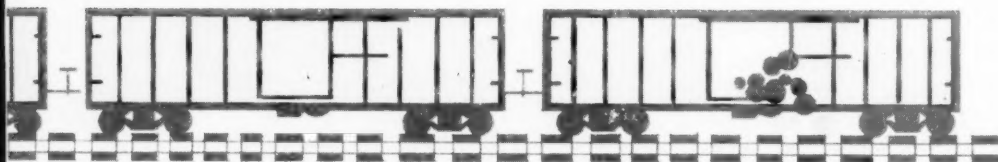
- A modified icebunker car (equipped with a small diesel engine to operate fans whenever refrigeration is needed) provides good dis-

tribution of gas. Here the bypass fans, which circulate the air only in the load compartment, are operated during fumigation.

- In a mechanical refrigerator car the dispersion of gas is also good, but the doors have to be opened at the end of fumigation to rapidly de-gas the car.

The research, which pointed the way toward these improved fumigation techniques, was carried out by the Market Quality Research Division of AMS in Fresno, California.

A more complete copy of this report is available from the Editor.



## "Prepackaging California GRAPES"

**G**OOD NEWS for grape growers! By shipping prepackaged grapes to eastern markets, California grower-shippers can receive premium prices for their product—enough to pay for packing the grapes in consumer-size packages.

According to a report published by the Agricultural Marketing Service, prepackaged grapes arrive at their destination in better condition than those in bulk packs.

Only 1½ percent of the prepackaged grapes included in test ship-

ments showed damage after the trip eastward. Two percent of those in conventional bulk packs were damaged.

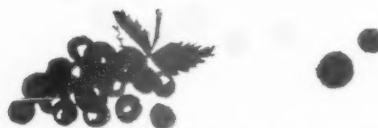
A folding tray overwrapped with film, a film windowed carton with a stapled bottom, and a plastic basket overwrapped with a sheet of polyethylene with many diagonal slits were the packages most favorably accepted.

The cost of prepackaging grapes is about 50 cents higher per package than for a regular bulk pack. This is

about the same amount as the premium paid for prepackaged grapes.

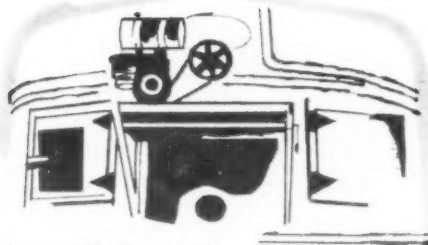
However, researchers expect the cost of the packaging to be reduced in the future. One grape packer reports he has been able to cut his prepackaging costs 10 cents a shipping container.

For a free copy of the report, "Prepackaging California Grapes at Shipping Point," MRR-410, write to the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.





## "Transporting Chipping POTATOES"



**A**TENTION TRUCKERS: Two heaters in the same end of a truck won't give adequate protection for a load of chipping potatoes in cold weather—but one heater in each end of the truck will if combined with forced air circulation.

That is one of the conclusions reached by Agricultural Marketing Service researchers who recently studied ways to protect truck shipments of chipping potatoes during cold weather.

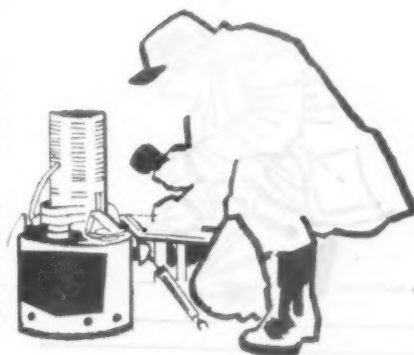
Potatoes, they point out, must be protected from low temperatures or they turn dark when processed into chips.

Researchers recommend these po-

tatoes be kept above 50° F. at all times, even during loading. This can be done by loading inside a heated shed or using a tunnel between the warehouse and heated truck. A truck blower fan can be used to distribute warm air.

They also recommend using floor racks in the load compartment and providing air space between the walls and the load. In this way, the warm air can circulate more freely.

For a copy of the complete report, "Protecting Chipping Potatoes from Low Temperatures During Transportation by Truck," write to the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.



## "Better Storage Methods for CABBAGE, CELERY and LETTUCE"



**T**HE U.S. NAVY is confronted, even in this modern age, with problems older than the voyage of Columbus—those of how best to store fresh produce aboard ship.

Cabbage, celery, and lettuce often spoil or lose food value before a cruise is over.

To help the Navy solve this storage dilemma on the high seas, the Agricultural Marketing Service packaged these three commodities in various ways and stored them under the specific temperatures of 32° F., 38° F., and 45° F.

The researchers found that cabbage, which deteriorates rapidly at 45° F., kept well at 32° F. or 38° F. for periods up to 6 weeks. After that, 32° F. was its safest storage temperature.

Perforated plastic liners and bags protected cabbage from wilting and accompanying weight losses.

Celery kept considerably longer at 32° F. than at either 38° F. or 45° F. for periods up to 6 weeks, but polyethylene bags were a necessity in

maintaining quality.

Lettuce kept as well for 4 weeks at 32° F., as it did for only 2 weeks at 38° F. Similarly, it was still as good after 6 weeks at 32° F. as it was after only 2 weeks at 45° F.

During the storage period, losses never exceeded 1 percent in polyethylene-lined crates. Parchment wraps reduced weight losses, too, but not as effectively.

Also, the removal of wrapper-leaves from lettuce before storage saves both weight and space.

These storage facts, uncovered through research, will not only lengthen the life of cabbage, celery, and lettuce aboard Uncle Sam's ships, but will be useful to produce men and commercial shippers faced with similar problems.

For a complete report of the AMS study, see "Cabbage, Celery, Lettuce, and Tomatoes: Laboratory Tests of Storage Methods," MRR-402. (The recommendations for storing tomatoes, however, apply only to ship-board conditions.)

# A DECADE of Growth in the Frozen Vegetable Industry

by Will M. Simmons



New ways to quick freeze, transport, and care for frozen foods have made the frozen vegetable industry a fast-growing enterprise. In the decade between 1949 and 1959, production increased from 563 million pounds to 1.6 billion pounds.



**B**USINESS indicators in the frozen vegetable industry continue to show an upward trend.

Data put together in the Agricultural Marketing Service to assist farmers, handlers, distributors, and others plan their production and marketing programs show that from 1949 to 1959, the pack of frozen vegetables and potatoes expanded three-fold. It went from 563 million pounds in 1949 to 1.6 billion last year. Its value increased from \$69 million in 1947 to \$230 million in 1958.

The reason: Housewives like the new products. Frozen foods make life a lot easier for the working wife, the busy homemaker, and the many women who seek more leisure time for recreation and social activities.

With frozen vegetables, they don't have to peel potatoes; they can pop spinach into a pan without washing and rewashing; and there's no peas to shell, corn to husk, or beans to string.

It's all done for the housewife if she buys her vegetables frozen. And evidently many women do—in greater and greater quantities.

Production of frozen vegetables has expanded much more rapidly than our population for all items except succotash and rhubarb—and these have matched the population increase.

Of course, some frozen vegetables have caught hold more rapidly than others. Potatoes are probably the best example. Though some potatoes were frozen in earlier years, the pack was not reported until 1953 when 71 million pounds were produced.

From then on, frozen potato products skyrocketed. By 1959, production had reached 371 million pounds, more than that of any other vegetable.

But potatoes have always been a big seller. They make up a third of the total consumption of vegetables in all forms. Frozen, they appear

mainly as french fries. Some also are whipped, shredded, and diced, or made into puffs and patties.

Next on the popularity list of frozen vegetables is that old banquet standby—peas. Even though frozen peas have been around longer than most other vegetables, they still are rapidly gaining both in production and consumption. In the past decade, consumption per person about doubled; the pack increased to 305 million pounds in 1959.

At the same time, institutional sales took a large step forward. Over half the pea pack now goes into institutional-size packages—for use by restaurants, hotels, hospitals, and the like.

Green and wax beans also are frozen in large quantities. In 1959, about 149 million pounds were produced—2½ times more than in 1949.

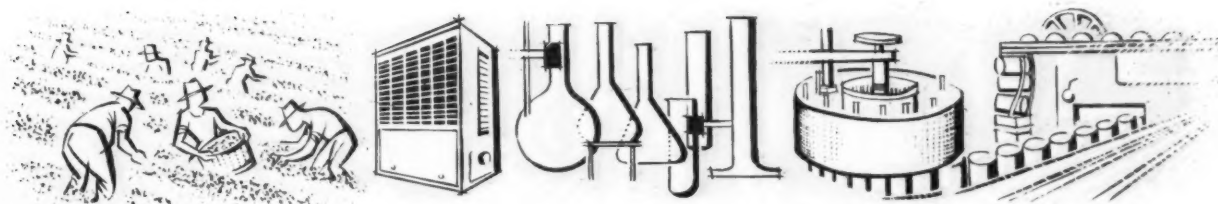
Again, institutional sizes have gained tremendously. Though the retail pack is much larger than in earlier years and still makes up more than half the total volume, it is losing ground to the institutional pack.

The situation is a little different for frozen corn. Here, the retail pack expanded more rapidly than the institutional pack. However, the institutional output still takes more than half the total volume. Much of this has gone into large, bulk containers which now take roughly four times as much as the smaller institutional packages.

Besides the "top four"—potatoes, peas, beans, and corn—several other vegetables have appeared in quantity in frozen form. Lima beans, broccoli, and spinach each had production totals over 100 million pounds last year.

About two-thirds of all frozen vegetables and potatoes are processed in the Western part of the country. The rest comes mainly from the East and South. Although the Midwest freezes large quantities of corn and green peas, it handles few other items in volume.

The author is Head of the Fruits and Vegetables Section, Agricultural Economics Division, AMS.



# The Changing Market

## Plentiful Foods for November

Turkeys and cranberries are featured on the November Plentiful Foods List of the U.S. Department of Agriculture.

Also in good supply will be beef, pork, onions, cabbage, dates, and vegetable fats and oils. In most areas, potatoes will also be plentiful.

## Turkey Sausage—A New Product

Western Michigan poultrymen have found a new way to sell more turkeys—by introducing turkey sausage to the people of Michigan.

The idea was developed 3 years ago by a committee of Ottawa County, Mich., poultrymen working with Richard A. Machiele, county Extension director. A commercial processor in the Grand Rapids area produced the sausages.

The new product, fully cooked and smoked, is especially delicious when fried and served hot. It also is good as a cold cut.

Turkey sausages made their debut last fall at the Michigan Poultry Days Festival held in Holland, Mich. Some 1,200 guests were served eggs and turkey sausage for breakfast.

A local radio station broadcast its Breakfast Club program from the auditorium and gave poultry products as gifts to participants.

On the retail market, turkey sausage sold at competitive prices with other cooked, smoked sausage. In one store where acceptance seemed a little slow, taste samples were offered. The store sold out and had to reorder.

In spite of the strong demand for whole turkeys before Christmas, demand for the new product also continued. Much of the post-holiday sales, however, went for institutional use.

Turkey sausage is again being manufactured this fall in Michigan. Plans are to make it available over a wider area of the State.

Turkey sausage may have possibilities in other States as well. It's not hard to manufacture and customers like it.

## A New Cranberry Product

A new cranberry product, cranberry table syrup, is making its debut in Massachusetts. Boys and girls of the Massachusetts 4-H Clubs are introducing the new product to their State.

These 4-H boys and girls who number about 12,000 are selling the syrup in their spare time to make money for the State 4-H Club Foundation which helps support the State 4-H Club work.

Their big sales push started during Cranberry Harvest Week (September 28-October 8) when markets nationwide featured cranberries. The young people sold the syrup mostly from booths or counters in retail food stores.

The syrup was packed exclusively for the 4-H members by a growers' cooperative. And the label on its attractive bottle and outside on the cardboard container carries the familiar green 4-H emblem.

If the new product succeeds in Massachusetts, consumers can expect

it on markets elsewhere in the future. It is brilliant red, the natural fruit color, and developed to be "not too tart and not too sweet." It may be used on pancakes or waffles, grapefruit or other fruit, ice cream, cake or other desserts.

## Marketing Costs for Fall Potatoes

Marketing costs for fall potatoes—the difference between the prices farmers receive and consumers pay—have been ranging from 3 to 7 cents a pound, according to AMS researchers.

Whether it's 3 or 7 cents depends mainly upon the season, the areas in which the potatoes are grown and bought, and the variety purchased.

For instance, the higher 7-cent margin was for Idaho Russets sold in New York City during the 1957-58 season, while the 3-cent margin was for Long Island Katahdin-Chippewas sold in New York City during the same year. In these cases, consumers paid an average of 9.3 cents a pound for the Idaho Russets and 4.9 cents for the Long Island potatoes. Growers, in return, got 2.1 cents a pound for the Idahos and 1.8 cents for the Long Island potatoes.

The study, which covered a 4-year period from 1955 through 1958, included potatoes in 10-pound, 50-pound, and 100-pound bags sold in Atlanta, Chicago, Los Angeles, and New York City.

Researchers found that—

- Though the marketing costs and charges for potatoes vary sharply from season to season, there has been

## The Changing Market

an increase in each of the past few years.

- California growers, on an average, received higher prices for their potatoes than other growers. However, in no area were prices consistently lowest.

- Price markups by wholesalers and retailers accounted for the largest part of the spread between prices to farmers and those paid by consumers.

Fall potatoes comprise about two-thirds of the U.S. potato crop. An average of 164 million hundred-weight is produced each season. Most of the crop moves into storage for use during the winter.

For more details on the study, see "Marketing Margins for Fall Potatoes," an AMS report.

### Marketing Workshop in Biloxi

The 1960 National Marketing Service Workshop will be held in Biloxi, Mississippi, November 15, 16, and 17.

Its purpose: to improve and maintain the efficiency of State marketing service programs.

Marketing men from all over the United States will meet to discuss new methods and techniques for solving marketing problems.

The Hon. Jamie Whitten, member of Congress from Mississippi, will keynote the meeting with a speech on "The Role of Marketing in Solving Agricultural Problems."

After each general session, the workshop will divide into eight work groups.

These groups will deal specifically

with marketing problems as they relate to the administration of marketing programs, promotion of agricultural products and marketing programs, dairy products, fruits and vegetables, grain, livestock, poultry and eggs, and special topics.

Improving transportation of agricultural products is one of the special subjects of this year's workshop. The annual cost of transporting food takes about 8 cents out of every consumer dollar spent on food. This cost can be held down through good transportation equipment, good service, reasonable charges, proper protective services, suitable containers and loading methods, and a public regulatory policy that encourages efficiency. This session will show State departments of agriculture how to develop marketing service programs in the transportation field.

### Changes in Processing Hides

Livestock producers can benefit from a larger hide market if processors can cut marketing costs by using new methods for processing and curing green hides.

That's the conclusion of Agricultural Marketing Service researcher John W. Thompson, after studying changes in processing and marketing cattle hides.

According to Mr. Thompson, one of the most important changes in the hide processing industry has occurred with the development of a machine that cleans the flesh and manure from the hides before they are cured. The machine—called a flesher—is rapidly

finding acceptance in the industry, and in 1960 it will be used to process over 2 million hides.

Until recently, hides were cured by covering them with salt and storing them for 30 to 60 days.

Now some plants use the new machine to remove the flesh and manure left on the hides before curing. When this is done, the salt can penetrate the hide more easily and curing is accomplished in 1 to 4 days.

This lowers the amount of capital tied up in hide inventories and the amount of storage space needed. It also makes it easier for the processor to judge what kind of a market he'll find for his product—because the time lag is only a few days instead of 1 or 2 months.

Machine fleshing before curing also helps processors turn out a better quality hide. Because the entire surface of the hides is exposed to the salt, there is less chance of a poor cure.

However, before hide processors rush into machine fleshing, they should have a volume of at least 500 hides a day. It takes this many to offset the \$65,000 investment in fleshing and wet brine curing equipment. Many of the firms now using the new method have brought their volume up to this mark by merging or combining with other packers, hide dealers, or renderers.

A copy of the full report, "Changes in Processing and Curing Hides," AMS-410, can be obtained from the Marketing Information Division, AMS, United States Department of Agriculture, Washington 25, D. C.



